MESENTERIC CYSTS *

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Cysts of the mesentery are interesting because of their history, rarity, origin and disputed classification, the infrequency of their being diagnosed and as a cause of intestinal obstruction.

The first case, a female child, who had intestinal obstruction as a result of the cyst occluding the bowel, was an enterogenous cyst operated upon May 5, 1924. The second, an adult male, was operated upon by Dr. Charles F. Mitchell, March 26, 1925. This sac contained a sebaceous-like material and was thought to be a dermoid. Other cases have been reported by fellows of the Philadelphia Academy of Surgery: Dr. H. C. Deaver,[1] Congenital mesenteric cysts, 1909. Dr. Charles H. Frazier,[2] Mesenteric cysts with a report of a case of sanguineous cyst of the mesentery of the small intestine, 1913. Dr. Thomas A. Shallow,[3] Entero-mesenteric cysts, April, 1925. Dr. William J. Ryan,[4] Omental cysts, October, 1926.

History.—Their history has been divided by Braquehaye[5] into three periods, and Ney and Wilkinson,[6] in 1911, suggested a fourth.

First Period.—The first case recorded was by Benevieni, a Florentine anatomist, in 1507. He found it accidentally at autopsy, and characterized it as an anatomical marvel. Tulpio, Morgagni and others, from that time until about 1850, reported cases, but in each instance, the tumor was discovered only at the post mortem.

Second Period.—From 1850 to 1880, a few were treated by operation, but almost invariably upon a wrong diagnosis and with a uniformly fatal result.

Third Period.—From 1880 to the present time. Many were reported in which a diagnosis was made before celiotomy and were then treated with good results chiefly by French surgeons, among whom Pean, Millard, Tillaux, and Merklen were especially worthy of mention.

Ney and Wilkinson, in 1911, suggested a *Fourth Period* from 1900 to the present time, commencing at the time of Dowd's[7] interesting theory—"The origin of mesenteric cysts from embryonic sequestration," and extending to the present day.

Cysts of the mesentery are among the *surgical rarities.* In text-books, the subject is either omitted altogether or dismissed in a few brief sentences. However, Dowd states that reports indicate that mesenteric cysts are being removed at least as often as once a month and if microscopical examination of their walls and chemical and microscopical examinations of the contents are made, the entire subject should be soon understood. Cystic tumors of

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the mesentery are probably more uncommon than similar lesions of any of the other structures of the abdominal cavity.

In 1886, Augagneur [8] found that 18 out of 90 cases of tumors of the mesentery were cystic. Arekion,[9] 1891, gave reference to 81 reported cases. In 1892, Braquehaye (*loc. cit.*) added 23 to his number, making 104. In 1897, Moynihan [10] reported nine additional cases and Dowd (*loc. cit.*) in 1900, collected from literature 32 cases. This makes a total of 145 cases. Dowd, however, stated that many of these are not reported sufficiently in detail to make them really intelligible.

Edward G. Jones [11] says that Lawson Tait is said never to have seen a mesenteric cyst and Spencer Wells only two. Dr. L. L. McArthur, of Chicago, stated in 1912 that he had never seen a chylous cyst of the mesentery and quotes the late A. H. Ferguson as having the same experience. In 1912, Friend,[13] of Chicago, collected fifty-two cases of the chylous type and in 1913, A. L. Benedict,[12] of Buffalo, supplemented Friend's list, bringing the total to ninety-six. The chylous type embraces approximately one-half of the mesenteric cysts, so that about 200 in all can be found in medical literature.

F. Rosenbladt,[14] in 1915, stated that about 200 isolated cases were recorded in literature. This excludes omental cysts which are usually classed under mesenteric cysts and are, no doubt, similar in structure and origin. Doctor Ryan states that there have been but forty-four cases of omental cysts reported since 1852, when Gairdner reported an autopsy specimen before the Pathological Society of London. Cysts may occur in the various parts of the mesentery. Dowd (February, 1921) stated that no case has occurred in the mesentery of the appendix, but one sees no reason why it should not occur there as well as in any other region of that structure and in all probability many have been found there. In reviewing the literature, I have found that in 1913, Willems, W.,[15] reported a dermoid cyst between the layers of the mesoappendix.

Carter,[16] in his article in 1921, says that there have been between two and three hundred cases reported including all varieties.

Higgins and Lloyd,[17] in July, 1924, stated that about 250 cases have been published, chiefly by surgeons, since the first case described by the Florentine anatomish Benevieni, in 1507.

The *genesis* of mesenteric cysts was a very obscure subject until rather recent years. A considerable amount of speculation has been indulged in an attempt to explain the origin of the cystic tumors of the mesentery. The ideas of the older pathologists were indefinite. Such cysts were attributed variously to lymph stasis, with resultant dilatation of a lymphatic gland or vessel, and to cystic degeneration of a lipoma or tuberculous glands. Rokitansky [18] in 1842, Moynihan in 1897, and Dowd in 1900 have each offered theories. Dowd's article aroused renewed interest in this subject, and recent work has resulted in a very considerable increase in our knowledge, though even now there is no general agreement of the writers.

We can determine the nature of a cystic tumor by studying the life history, its location, the structure of its wall and the character of its contents. Classifications have been based upon these findings.

The first formal description of such a cyst was made by Rokitansky in 1842. Subsequently, Brucy and Rokitansky each described a number of these cysts and each endeavored to prove their origin from degenerated lymph-nodes. To this, singularly enough, Virchow,[19] 1887, agreed. In 1892, Braquehaye (*loc. cit.*) classified mesenteric cysts as (a) sanguineous; (b) lymphatic cysts, including chylous cysts; (c) hydatid

cysts; (d) congenital and dermoids; (e) cysts of adjoining organs, ovaries, pancreas, etc. In 1897, Moynihan (*loc. cit.*) classified them as (a) serous; (b) chylous; (c) hydatids; (d) blood; (e) dermoid; (f) cystic malignant disease.

In 1900 appeared Dowd's widely quoted paper in which he divided mesenteric cysts according to what he believes to be their origin into (a) Embryonic, including—1. Dermoids, 2. Serous, 3. Chylous, 4. Hemorrhagic, 5. Cysts with walls like that of intestines, (b) Hydatid, (c) Malignant disease.

He successfully removed from the transverse mesocolon of an adult woman a cyst which closely resembled in detail a multilocular ovarian cystoma. The ovaries of this patient seemed normal on palpation. In presenting this case, he pointed out the close anatomical relationship existing in embryonic life between the Wolffian body or germinal epithelium and the root of the mesentery, and suggested the possibility of the sequestration from the germinal epithelium of a group of cells which might be displaced by the subsequent growth of the individual in such a way as to take up an intramesenteric position; later on, perhaps, during the adult life, such a sequestrum from the germinal epithelium might develop into a tumor similar to the one he removed. Going further, he suggests that small portions of the developing gut may be similarly sequestrated to lie perhaps between the leaves of the mesentery and later develop into a cyst. The emphasis laid on the probably embryonic origin of a large number of mesenteric cysts represented a decided advance in our knowledge of this subject. Since Dowd's paper, this idea has been repeatedly emphasized and elaborated.

In 1902, Moynihan (*loc. cit.*) also expressed the opinion that most of such cysts originate from embryonic remnants.

In 1906, Ayers, J. C.,[20] expressed himself as of the same opinion but simplified Dowd's classification by adding two more groups, (a) cysts arising from the glandular structure of the intestinal wall, (b) cysts of the normally placed retro-peritoneal organs.

In 1907, Niosi,[21] in an excellent paper, states his belief that about one-half of all mesenteric cysts are acquired and places the so-called lymphatic and chylous cysts in this group. Klemm,[22] on the other hand, in 1905, found the wall of the lymphatic mesenteric cysts to be made up wholly of those cells which arise from the mesoderm, and argues that these cysts are neoplasms developing from misplaced or sequestrated portions of the mesodermic tissue, and hence form a group of tumors of embryonic origin for which he proposes the name of "mesodermoids," by way of analogy to that group of tumors called dermoids.

Niosi divided embryonic mesenteric cysts as follows:

1. Cysts of intestinal origin, (a) Sequestrations from bowel during development, (b) From Meckel's diverticulum. 2. Dermoids. 3. Cysts from retroperitoneal organs (germinal epithelium, ovary, Wolffian body, Mullerian duct).

In 1909, Deaver, H. C., agreed with Dowd that all such growths, with the exception of parasitic and malignant cysts, are of embryonic origin.

Eric Gould, also in 1913, approved of Dowd's simplified classification, but because of several cases of chronic abscesses that he had seen in the mesentery of tuberculous nature, he suggested that the simplest and most correct pathological grouping is into the three classes as follows:

1. Cysts arising in embryonic remnants and sequestrated tissue, (a) Serous, (b) Chylous, (c) Sanguineous, (d) Dermoids, (e) Cysts from intestinal diverticula. 2. Cysts of infective origin, (a) Hydatids, (b) Tuberculous abscesses. 3. Malignant cysts.

In 1913, Miller,[23] in a most complete article on "Enterogenous Mesenteric Cysts," states that the idea that a portion of an embryonic tissue or organ may become sequestrated and still continue to develop though usually in an anomalous manner, is a familiar one. Bauer[24] credits Verneiul and Remak with the first proposal of this idea, while quoting Ribberts' expression of the theory as the best. A free rendering of this passage from Ribberts is perhaps not superfluous. Epithelial cysts may be formed not only

as a result of trauma, but also by abnormal development; irregular growth may cause a change of position or a changed relationship without actual change of position; or, again, epithelial structures which should coalesce fail to do so, or finally, those which should decrease in size, or disappear entirely retain their maximum dimensions. A group of epithelial cells with its connective-tissue support is rendered more or less independent in growth by either of these processes and thenceforth develops as a cyst whose lumen is constantly enlarged by the retention of its own secretion and desquamated epithelium, although this increase in size is usually extremely slow and scarcely noticeable. When suggesting this process to explain the enterogenous origin of certain mesenteric cysts, Dowd argues by analogy, instancing, the comparative frequency with which a typical development results in an accessory thyroid, spleen, or pancreas. The actual process of sequestration from the developing gut was not observed until 1908, when there appeared a report from Lewis and Thyng in which they described the "regular occurrence of intestinal diverticula in embryos of the pig, rabbit and man." Previous to this time, Lewis had discovered a "knoblike outpocketing of the intestinal epithelium a short distance beyond the pancreas" in a rabbit embryo, while Thyng had found a similar structure in a human embryo of 13.6 mm. and had interpreted it as an accessory pancreas. Lewis and Thyng have thus established the fact that the formation of diverticula and cysts is a regular occurrence in the embryonic development of the gut. There can be scarcely a doubt that such a cyst may occasionally persist to be recognized after birth as a "mesenteric cyst."

While the findings of Lewis and Thyng account for a certain number of mesenteric cysts, there is a general agreement among those who have studied this question that most juxta-intestinal cysts, even when intramesenteric in position, have their origin in the vitelline or omphalo-mesenteric duct or in Meckel's diverticulum.

It is apparently established that Meckel's diverticulum or persistent remnants of the omphalo-mesenteric duct may give rise to a mesenteric or juxta-intestinal cyst along practically the entire course of the small bowel, though such an occurrence must be exceedingly rare in the extreme upper limits of the bowel.

Miller suggests certain general features which may aid one in determining whether a cyst represented the process of sequestration from the bowel as described by Lewis and Thyng, or whether it developed from Meckel's diverticulum or the persistent remains of the omphalo-mesenteric duct. Manifestly, the problem presents many difficulties and is wholly impossible.

A mesenteric cyst of either of these two types (Lewis and Thyng's embryonic cysts and the omphalo-mesenteric duct) arises from the bowel whose structure it shares; such a cyst, when typical and unaltered by inflammation, presents certain features which are quite characteristic and easily recognized. The resemblance to the adjacent bowel may be little short of exact, in that there is found a mucosa with typical glands, goblet cells and ciliated cells, well-developed villi, a distinct submucosa and two layers of smooth muscle placed at right angles to each other. The picture, however, is usually not so clear. The widest variations from the typical are found in the epithelial linings. The wall of a typical enterogenous cyst shows two well-developed layers of smooth muscle running at right angles to each other as they do in the bowel wall.

Arguments based on cellular structure must take into account the possibility of histological alterations in the wall of a cyst, for such changes could readily obscure the picture; inflammation can substitute scar tissue for any other tissue.

In 1915, Jones, E. G.,[11] likewise agrees that there is a growing tendency to regard most mesenteric cysts as having their genesis in embryonic rests.

In 1921, R. M. Carter suggested another classification though evidently based on Dowd's as follows:

1. True mesenteric cysts, subdivided according to their probable origin into (a) Embryocystomata; (b) Enterocystomata, by which I understand not only tumors of

Meckel's diverticulum, but also tumors arising from sequestrations from the bowel; (c) Obstructive possibly. 2. Dermoids. 3. Cystic malignant disease. 4. Parasitic.

By applying this classification to all cystic tumors of the mesentery, Carter believes that more uniformity of description would at least be obtained than at present exists in the literature.

It is plain that more and more are coming to regard all mesenteric cysts not parasitic or malignant, as of embryonic origin. The term "cystic malignant disease" which has been given as a class of mesenteric cysts is no longer tenable. Malignant cysts are probably for the most part originally simple cysts which subsequently have become malignant. Moreover, a metastatic malignant tumor of the mesentery or, for that matter, a primary one which undergoes cystic degeneration is not morphologically a cyst.

Some anomalous and hitherto unclassified cysts are true mesenteric cysts which have developed from meso-dermal remnants behind the peritoneum but which, unlike the ordinary clinical mesenteric cyst, have not moved anteriorly into the developing peritoneal folds.

It is important to distinguish the cysts of which we speak from the large cysts of the kidney which occur generally singly and quite apart from chronic nephritic, congenital cystic disease, and echinococcus infection; these are cysts of the kidney substance proper, and may communicate with the pelvis or contain fluid closely allied to urine, whereas the pararenal variety is definitely outside the kidney, and, though they may indent its substance, are not attached to it, and contain the characteristic fluid previously described. Pararenal cysts are very rare, and have received scant notice in the text-books. There is no mention of them in *Keen's Surgery* and only a few lines in some of the standard works on urology. Thus, Morris, Garceau, Thomson, Walker and Kidd all refer briefly to them, and allude to a possible origin from Wolffian body remnants; but no attempt seems to have been made to associate them particularly with mesenteric cysts, nor does their close resemblance, and that of their contents, to mesenteric cysts seem to have received due notice.

Many writers speak of true mesenteric cysts as not being malignant, parasitic or dermoid.

Dowd, in speaking of "dermoid cysts," as well as many others, believes them always to be due to an error in development in the ovary or some one of the epithelial structures. They occur chiefly in the abdomen and in places where skin-covered surfaces coalesce during embryonic life. When in the abdomen, they are believed to be of ovarian origin. There have been records of several mesenteric dermoids. Gould, in 1913, stated that about 23 dermoids had been reported in an article written in 1908. Since that time, we have found at least twelve others reported, making a total of thirty-five to the present time. Schultzer records one in which two canines, two incisors and eight molars were present. Mayer describes a dermoid larger than a man's head which was taken from the mesentery; it was free from the genitals. The inner cyst wall was smooth and shiny and beset with long black hair; the fluid was yellowish-brown similar to pea soup.

Spencer Wells removed from between the folds of the mesentery one which contained bundles of fine hair and six pounds of fatty material and flattened epithelium. Langton removed a dermoid from between the layers of the mesentery and another

from each ovary. Konig states that he has observed a dermoid cyst in the mesentery. These cysts are all believed to be of embryonic origin and I know of no other theory which explains their formation.

Ney and Wilkinson and others have noted that all mesenteric dermoids reported have occurred in females and, therefore, conclude that all are of ovarian origin. Higgins and Lloyd (*loc. cit.*), 1924, also state that no retroperitoneal or mesenteric dermoids have been reported in the male, though they have occurred in the testis which is originally a retro-peritoneal organ. This has been held as evidence that an ovary is responsible for the true dermoid when it occurs in the mesentery.

Moynihan, 1897, says that cystic disease of the mesentery is very much more common in women than in men. The only form of cyst found with perhaps equal frequency in the two sexes is the hemorrhagic cyst as one might suppose from the mode of origin. Dermoid cysts have been found only in women. The extremes of life are not exempt from the disease. Cases are recorded at the age of four months (Lucassett and Winiwarter) and at the advanced age of eighty years.

In 1913, Willems, W., reported a case. Dermoid cysti zwishen den Blattern der Mesoappendix.

Symptomatology and Diagnosis.—There are no signs or symptoms which are pathognomonic of mesenteric cysts but given a tumor in the abdominal cavity which is smooth, rounded and cystic and unusually mobile as in our first case, we should think that the diagnosis would be easy. That the diagnosis of mesenteric cysts is difficult, is proved by the fact that no case has been recognized with certainty previous to operation or autopsy. In a typical case, the mobility of the tumor is the striking feature. Other symptoms are the result of pressure on the bowel with resultant pain and obstruction symptoms. Porter says that pain is more frequent with this condition than with any other type of abdominal cystic tumor. A history of repeated attacks of abdominal pain associated frequently with vomiting and often with alternating periods of diarrhœa and constipation is significant. These attacks are presumably due to increased peristalsis, in an effort to overcome the narrowing of the bowel produced by the encroachment of the cyst upon its lumen or they may be due to attacks of partial volvulus. This narrowing may occasionally be so great as to cause absolute obstruction; a volvulus may also become complete. Strangulation and gangrene of the gut due to pressure have occurred.

General wasting is not a characteristic symptom even when a large tumor is present and obstruction of the lacteals might be expected. Small cysts may give rise to no symptoms whatever, unless, for some cause or other, an acute inflammatory condition arises. Under such circumstances, the symptoms are similar to other acute abdominal conditions and must be differentiated. As the cyst becomes larger, they must be differentiated, from ovarian cysts, retroperitoneal growths, hydronephrosis, movable kidney, pancreatic cysts, new growths of the intestine and the pregnant uterus.

The differential diagnosis may be considered briefly under two heads as described by Higgins and Lloyd: 1. Diagnosis from other intra-abdominal tumors. 2. Diagnosis between individual cysts.

In a typical case, the situation, mobility and general characters of the

tumor may localize it with probability to the mesentery, and serve to distinguish it from other abdominal swellings. Its cystic character may also be surmised. It should usually be possible to exclude parasitic and malignant cysts, but a tuberculous abscess in the mesentery may present all the features enumerated above, and indeed, in childhood at any rate, is the most common type of "mesenteric cyst" to be exposed by operation.

Though it is admittedly a very difficult diagnosis to make, yet, there are cases where, once suspected, a mesenteric cyst should be diagnosed. Obviously, the attempt ought always to be made.

Complications.—1. Intestinal obstruction is the most frequent and the most serious of the common complications. In a small series of 17 enterogenous cysts, acute obstruction occurred in nearly 50 per cent., whilst the group mortality of 35 cases of obstruction due to this cause was 35 per cent. The methods by which it may be brought about are mechanical, and include volvulus, intussusception, kinking, adhesions, and narrowing or occlusion of the intestine over it.

2. Peritonitis, when it occurs, is a sequel to the above.

3. Hemorrhage into the cyst has caused death.

4. Rupture of the cyst may also cause death (Timbal[26]); but there are two cases of recovery following what seems to have been spontaneous rupture of the cyst into the bowel.

5. Torsion of the cyst.

6. If a mesenteric cyst occupies the pelvis, it may itself become impacted or may give rise to symptoms varying with the organ upon which it presses.

The *treatment* of mesenteric cysts may be covered in a few words as described by Miller. In the group of acute cases we are dealing always with intestinal obstruction or peritonitis and the treatment is directed toward these conditions primarily and the operation is an emergency.

In the second group, the latent cases, the operation is an elective one and choice is to be made between—1. Drainage. 2. Enucleation, and 3. Resection. *Drainage* is attended by a very low primary mortality but is apt to result in a persistent sinus, which will ultimately require excision, and, hence, is not altogether desirable. Without differentiating the type of cyst dealt with, Coley[27] has estimated the mortality following drainage at 6 per cent. This probably includes some deaths due to complications and seems a very high rate.

Enucleation was done ten times without a death in 16 cases. This is undoubtedly the procedure of choice when it is feasible. The cyst may be part and parcel of the intestinal wall, when it is impossible to enucleate without opening the gut. Enucleation of a cyst or multiple cysts may do irreparable damage to the circulation of the bowel, enforcing resection. Dense adhesions may render enucleation impossible without tearing the bowel. The cyst may occupy an intra-intestinal position, as in several reported cases, near the ileo-cæcal valve and even be drawn into the cæcum, simulating an intussusception. In such circumstances, the bowel must be

opened to expose the cyst. These conditions among others may compel resection.

In five cases of *resection* of Miller's series, there were three deaths, a mortality of 60 per cent. So high a mortality is due partly to the serious condition of most of these patients, but the figures serve in a general way the relative safety of enucleation of the cyst as compared to resection of the bowel.

Undoubtedly, the best treatment is *enucleation* when it can be done without seriously injuring the bowel.

Aspiration has no place in modern surgery, although it was the favorite procedure with the older surgeons.

Marsupialization is also obsolete, and properly so, unless in very exceptional instances.

CASE I.—M. B., female child, age seven, private patient in the Germantown Hospital. Admitted April 25, 1924. Discharged cured May 5, 1924.

Eight days before admission to the hospital, the child began to have attacks of pain in the upper abdomen with vomiting. These pains became progressively worse, were paroxysmal and followed with vomiting. The day before admission, the vomiting increased in severity and was fecal. The bowels had not moved for three days and there was no flatus expelled during the last twelve hours. The mother stated that the child had several attacks somewhat similar in character and that constipation had existed for years. She also noticed that the child's abdomen was enlarged but thought the swelling disappeared as she recovered from the attacks.

Physical examination revealed a fairly well-developed girl. The tongue was coated. The heart and lungs were normal. The abdomen was enlarged and tympanitic to percussion. In the upper left quadrant there was a mass about the size of a small grape fruit. This mass was freely movable and when first felt was found in the midline in the bladder area. It was regular in outline and smooth and cystic to touch and dull to percussion. By palpation of the mass we noticed that it had suddenly disappeared from the midline into the left upper quadrant and had almost disappeared under the ribs. By further manipulation we found that we could displace the tumor and place it over into the right upper quadrant beneath the ribs. There was some tenderness over the mass and slight rigidity of the abdomen.

Before operation, temperature was 99°; pulse, 96; respirations, 24. The leucocyte count was not made. Urine, clear amber, acid. Specific gravity, 1.012; albumen negative; sugar negative; acetone negative; white blood-cells 3 to 8 to H. P. F.; occasional hyaline casts; amorph. urates.

Dr. Charles F. Mitchell saw this child in consultation with Dr. Walter Andrus and myself. Previously, the child was seen by a pædiatrician. We all agreed that the tumor mass was causing an intestinal obstruction. Three of us agreed that it was cystic and the pædiatrician made a provisional diagnosis of intussusception. One diagnosis was omental cyst and another ovarian cyst and the third indefinite.

Under ether anæsthesia a median incision was made below the umbilicus about four inches long. With some difficulty a movable cyst was brought into the field of operation and delivered. It was found to originate from the mesentery of the ileum and about the size of a small grape fruit. It was occluding the portion of the bowel attached. A trocar was plunged into it and 290 c.c. of a dark bloody colored fluid was removed. The peritoneum was incised at its base and with gauze, the peritoneum was stripped from the sac and the wall enucleated. This portion of the bowel was collapsed and congested. The distal portion of the bowel was collapsed and the proximal distended. The mesentery was carefully repaired. The blood supply to the bowel was

preserved; peristalsis was noticed in the bowel; the abdomen was closed without drainage.

The recovery was uneventful. The bowels moved normally several days after operation and the child left the hospital on the tenth day cured.

The *microscopical examination* of a section of the cyst wall showed it composed of three coats, an inner serous, a middle muscular with bands going in two directions, some lymph-tissue scattered between these two coats. The inner was a thick fibrous envelope undergoing calcareous changes.

A section from another portion of the wall shows the same three coats, the inner one composed of a hypertrophied endothelium.

The laboratory report on the contents of the cyst—290 c.c. of a dark bloody-colored fluid; culture, sterile. No chemical tests made. The fluid most likely was blood, serum or lymph.

CASE II.—Private patient of Dr. Charles F. Mitchell. S. W., male, age twenty-six; Chestnut Hill Hospital. Seen with Doctors Cheston and McCloskey, February 8, 1925.

In July, 1924, Doctor McCloskey first treated the patient for what he thought was a mild attack of gall-bladder trouble. The appendix had been removed ten years ago. On February 4, 1925, he slipped on ice, following which the patient had pain in the left groin and left side of abdomen. There was no sign of any hernia. Bowels were moved by oil.

Examination.—There was a mass in the upper portion of the abdomen a little to the left of the median line. The mass was slightly tender to touch, apparently smooth in outline and seemingly fairly well fixed. There was no history of any urinary disturbance. The mass felt like an enlarged kidney, and the diagnosis hinged between that of an enlarged, possibly cystic kidney, cyst or tumor of the spleen or tumor of mesentery or omentum.

X-ray taken by Doctor Pancoast at the University Hospital showed that the mass did not coincide with the line of the kidney and was, therefore, intra-abdominal.

February 27, 1925, the patient was taken to the Chestnut Hill Hospital. Following a hypodermic injection of morphine and atropine, gas anæsthesia was administered. The incision made was about four inches in length through the left rectus muscle. The left kidney was found in good position and normal in outline. The spleen was of normal size and shape. To the left of the median line, a large mass was felt consisting of a mass of intestines tightly bound together by adhesions. The intestines and other structures of the peritoneal cavity were packed away with gauze-pads; the intestines were separated and the mass itself was found to be one situated between the layers of mesentery of the upper portion of the jejunum. The incision was made through one layer of the mesentery immediately over the mass and the tumor shelled out from its bed from between the layers of the mesentery. The blood supply of the jejunum was preserved, the wound in the mesentery sutured, and the abdominal wall closed.

Post-operative convalescence was uneventful, and the patient discharged cured, March 9, 1925.

The mass removed proved to be a cyst about the size of an ordinary grape fruit. When opened, it was found to be filled with a thick, sebaceous material. Diagnosis from pathological laboratory—sebaceous cyst.

CONCLUSIONS

The specimen from Case I is undoubtedly an enterogenous cyst as is verified from the microscopical picture of its wall. The fluid present in the sac was bloody. Unfortunately, the chemical analysis was not made. It may have been blood, serum, lymph or chyle. Nevertheless, conclusions based upon the character of the cyst contents can hardly be considered final, for as Dowd has suggested, the fluid that collects in a preformed cyst is probably

a mere matter of chance, whether lymph, chyle, or blood from a ruptured mural vessel.

The symptoms here present are typical, associated with the symptoms of intestinal obstruction, a very common complication. The diagnosis of a cyst was made as well as obstruction of the bowel. Omental cyst, the symptoms of which are almost the same as those of mesenteric cyst, was considered but the diagnosis of mesenteric cyst was not made previous to operation. Had we made the diagnosis instead of omental cyst or ovarian cyst, we would have been the first to have had made a correct one previous to operation or autopsy. Fortunately, our cyst was one that could be enucleated. Enucleation is the most satisfactory treatment when it can be done. This patient had an uneventful recovery and when seen several days ago, she was in the best of health and has had no abdominal disturbance since her operation.

The *second case* (Dr. Charles F. Mitchell's patient) is interesting because the contents of the cyst was a sebaceous-like material and, therefore, Doctor Mitchell considered it a dermoid cyst of the mesentery. Unfortunately, there was no hair or teeth in this sebaceous-like material and the laboratory did not report on the microscopic findings of the cyst contents or wall.

We cannot, therefore, prove that this specimen is a dermoid cyst of the mesentery. If we could, this case would be the first case reported as a dermoid cyst of the mesentery in a male. This would disprove the theory, mentioned by Dowd and many other authors, in speaking of dermoid cysts, that they always are due to an error in development in the ovary or some one of the epithelial structures. Higgins and Lloyd (1924) also state that no retroperitoneal or mesenteric dermoids have been reported in the male though they have occurred in the testis which is originally a retroperitoneal organ. This has been held as evidence that an ovary is responsible for the true dermoid when it occurs in the mesentery.

This specimen might be the remains of a tuberculous lymph-node or a degenerated hæmatoma or lipoma. A tuberculous abscess in the mesentery may present all the features of a true cyst and in childhood is the most common type of mesenteric cyst to be exposed by operation. Both Haworth [25] and Gould (*loc. cit.*) have reported such cases.

Because of the inflammatory nature of the cyst, it was adherent to the neighboring bowel and thereby lessened the mobility of the cyst. The bowels were constipated but there was no intestinal obstruction.

The symptoms here present are not as typical and do not warrant the correct diagnosis as in our first case.

This cyst was also enucleated and the patient had an uneventful recovery and has remained well.

I am greatly indebted to Doctor Mitchell for allowing me to report this case.

The most interesting part of the discussion of these cases is their origin and we believe with Higgins and Lloyd that the classification depends upon definitely defining first of all, the "true mesenteric cyst" as "Those which

occur in or near the mesentery and which are not malignant, dermoid, or parasitic, and do not arise in any normally placed retro-peritoneal organ."

Such cysts can then be classified as (a) Cysts of embryonic origin arising from mesodermal remnants incarcerated behind the developing peritoneum and subsequently migrating forward between its layers; (b) Cysts of intestinal origin—I. arising in most cases as diverticula from the bowel during development and II. possibly derived sometimes from persistent portions of the vitelline duct.

In this, one of the most recent classifications, our first specimen a "true mesenteric cyst," will be classified under cysts of intestinal origin. We cannot determine definitely whether arising as a diverticulum from the bowel during development or derived from persistent portions of the vitelline duct.

Our second specimen is not a true mesenteric cyst. We can only say that it is a sac containing a sebaceous-like material in the mesentery of the jejunum of a male patient. If it is not a dermoid, it is possibly a tuberculous abscess, degenerated lymph-node, hæmatoma or lipoma.

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